

WHAT IS CLAIMED IS:

1.    A pickup for a stringed musical instrument, comprising:
  - 5            a primary coil magnetically coupled to a string of the musical instrument and fixedly attached to a string support structure;
  - a secondary coil magnetically coupled to the primary coil, the secondary coil further coupled to the primary
  - 10           coil by a flexible suspension mechanism.
2.    The pickup of claim 1, wherein the primary coil and the secondary coil are electrically coupled in a noise-cancellation circuit.
- 15    3.    The pickup of claim 2, wherein the primary coil further comprises a primary coil winding wound in the same direction as a secondary coil winding in the secondary coil.
- 20    4.    The pickup of claim 1, wherein:
  - the string support structure includes a soundboard;
  - and the primary coil is fixedly attached to the soundboard.
- 25    5.    The pickup of claim 4, wherein the soundboard includes a soundhole and the pickup is mounted in the soundhole with the secondary coil extending into the musical instrument string support structure.
- 30    6.    The pickup of claim 1, wherein the string support structure includes a recess and the primary coil is fixedly mounted to a surface of the string support structure with the secondary coil extending into the recess.

1       **50612/FLC/B317**

7.    The pickup of claim 1, wherein the secondary coil has a resonant frequency in the range from 100 Hz to 500 Hz.

5       8.    The pickup of claim 1, wherein the flexible suspension mechanism has spring constant in the range from  $1 \times 10^4$  N/m to  $1 \times 10^6$  N/m.

10     9.    The pickup of claim 8, wherein the secondary coil has a mass in the range from 15 grams to 25 grams.

10.    A pickup for a stringed musical instrument, comprising:  
          a primary coil having a magnetic field for  
15       generation of a string signal in response to string movement;  
          a secondary coil electrically coupled to the primary coil in a noise cancellation circuit, the secondary coil flexibly coupled to a string support structure of the  
20       musical instrument and in the magnetic field of the primary coil whereby the secondary coil generates a string support structure signal in response to string support structure vibrations.

25     11.   A pickup for a stringed musical instrument having a string support structure, comprising:  
          a primary coil, the primary coil having magnetic means for generation of a magnetic field in proximity to the string, the primary coil generating a string signal  
30       in response to movement of the string within the magnetic field; and  
          a secondary coil electrically coupled to the primary coil in a noise-cancellation circuit, the secondary coil suspended within the primary coil's magnetic field by  
35       suspension means whereby the secondary coil vibrates

within the magnetic field and generates a string support  
          structure signal in response to vibrations of the string  
5        support structure.

12.    The pickup of claim 11, wherein the suspension means  
          comprises a pillar mechanically coupling the primary coil with  
          the secondary coil.

10        13.    The pickup of claim 12, wherein the pillar is  
          substantially centered with respect to the secondary coil.

14.    The pickup of claim 11, wherein the string support  
15        structure includes a recess and the primary coil is fixedly  
          mounted to a surface of the string support structure with the  
          secondary coil extending into the recess.

15.    The pickup of claim 11, wherein the secondary coil has a  
20        resonant frequency in the range from 100 Hz to 500 Hz.

16.    The pickup of claim 11, wherein the suspension mechanism  
          has spring constant in the range from  $1 \times 10^4$  N/m to  $1 \times 10^6$  N/m.

17.    The pickup of claim 8, wherein the secondary coil has a  
25        mass in the range from 15 grams to 25 grams.

18.    A pickup for a stringed musical instrument having a  
          string support structure, comprising:

30               a first coil magnetically coupled to a string of the  
          musical instrument and fixedly attached to the string  
          support structure;

          a second coil electrically coupled in a noise-  
          cancellation configuration with the first coil;

a third coil magnetically coupled to the first coil,  
the third coil further flexibly coupled to the first coil  
5      by a suspension mechanism; and

          a fourth coil electrically coupled in a noise-  
cancellation circuit with the third coil.

19. The pickup of claim 18, wherein the first coil further  
10      comprises a first coil winding wound in the same direction as  
a second coil winding in the second coil.

20. The pickup of claim 18, wherein the third coil further  
comprises a third coil winding wound in the same direction as  
15      a fourth coil winding in the fourth coil.

21. The pickup of claim 18, wherein the string support  
structure includes a soundboard and the first coil is fixedly  
attached to the soundboard.

22. The pickup of claim 21, wherein the soundboard includes a  
soundhole and the pickup is mounted in the soundhole with the  
third coil and fourth coil extending into the string support  
structure.

23. The pickup of claim 18, wherein the string support  
structure includes a recess and the first coil is fixedly  
mounted to a surface of the musical instrument string support  
structure with the third coil and fourth coil extending into  
30      the recess.